

17. The multi-band antenna apparatus according to claim 1, wherein the multi-band antenna includes a first element and a second element, the first and second elements having different resonant frequencies

REMARKS

In the Office Action, the Examiner rejected claim 1 under 35 USC Section 102(e) as being anticipated by Hope patent 6,075,488. Claims 6 and 7 were rejected under 35 USC Section 102(e) as being anticipated by Zhinong patent 5,963,871. Claims 2-3 were rejected under 35 USC Section 103(a) as being unpatentable over Hope in view of Applicants' admission one page 4. Claims 4-5 were rejected under 35 USC Section 103 over Hope in view of Applicants' admission and Zhinong. Claim 8 was rejected under 35 USC Section 103(a) as being unpatentable over Zhinong in view of Applicants' admission. Claim 9 was rejected under 35 USC Section 103(a) as being unpatentable over Zhinong in view of Garay et al. US patent 4,772,895. Claims 10 and 11 were objected to as being dependent upon a rejected claim, but indicated as being allowable if rewritten in independent form. Claims 12-16 were allowed. The Examiner's indication of Allowable subject matter is gratefully acknowledged. The rejection of the claims is respectfully traversed, and reconsideration of the claims is respectfully requested.

The Examiner indicates that Hope discloses a grounded helical antenna. The Applicants can not identify a grounded helical antenna in Hope. In Hope, element 60 and element 64 are specifically taught to be electrically connected (see FIG. 7), and are both connected to the RF generator. The antenna elements are clearly not grounded. Thus, Hope not only fails to anticipate the claimed invention, but teaches away from providing a grounded outer element.

The Zhinong patent similarly fails to disclose a grounded helical antenna around an inner antenna. Zhinong discloses a feed point 44 connected to helical antenna 40 and whip antenna 41, wherein the whip antenna and the helical coil are separated by a matching network. The matching network isolates

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the antennas from ground as shown in FIGs. 4c-4e. Thus, Zhinong fails to disclose a grounded outer antenna. Zhinong teaches connecting the helical coil to the feed point 44 , and thus teaches away from the claimed invention. Accordingly, Zhinong fails to show or suggest the claimed invention, and does not anticipate the claimed invention.

The secondary reference to Garay is cited for teaching an inner helical coil. However, even if the Garay inner helical resonator is added to Zhinong, Zhinong teaches connecting the outer element to the feed point, and not ground.

Accordingly, it is respectfully submitted the claims are in condition for allowance and Notice of Allowance is solicited.

Respectfully Submitted

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CLAIMS WITH DELETIONS AND INSERTIONS SHOWN

1. A [cellular telephone a] multi-band antenna apparatus comprising:
a multi-band antenna; and
a grounded helical antenna surrounding the multi-band antenna.
3. The multi-band antenna apparatus as in claim 2 wherein the multi-band antenna comprises a helical antenna and [coupled to] a monopole antenna.
6. A cellular telephone antenna comprising:
an inner antenna including a first element and a second element, the first and second elements having different resonant frequencies; and
a radio frequency (RF) grounded helical antenna surrounding the inner antenna, the RF grounded helical antenna including,
a first section having a distance between adjacent turns of a first predetermined amount, and
a second section having a distance between adjacent turns of a second predetermined amount, the second predetermined amount less than the first predetermined amount.
7. The cellular telephone antenna as in claim 6 wherein a resonant frequency of the RF grounded helical antenna is substantially equal to a resonant frequency of one of the first and second elements the inner antenna.
10. The cellular telephone antenna as in claim [9] 6 wherein the first antenna element comprises an inner helical element, and wherein the [a] resonant frequency of the RF grounded helical antenna is substantially equal to a resonant frequency of the inner antenna.